Beam Based Alignment in the SRF

- Alignments
  - BPM / quad axis installation offset: $\pm$ 1 mm installed
  - BPM to quad accuracy: 0.5 mm rms (screen BPM display to quad axis)

- Kick from quad offset at 0.5 mm: < ~0.4 mrad (at 185 MeV)

- 32 dipole correctors, 32 BPMs + 64 quad power supplies (can do BBA, average 2 quad centers/BPM)

- correction in 1 direction occurs every other cryomodule (~ 12 m in low beta section)

- < 5 mm orbit deviation (compared to 37 mm warm section pipe radius, the beam rms size is a few mm), should be OK for commissioning beam

- Questions:
  - Impact of cavity misalignment. 2^{nd} order?
  - Does passing through quad centers minimize losses?